Theory of Propagation of Detonation Wave

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size ($<4\mu$), but not always in case of the particles of the same size.

In conclusion, it is verified certainly that the inflammability depends mainly upon the volatile matter and size of the coal dust. Calcium carbonate is better as additionals, and the smaller, the more effective it is.

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8. Theory of Propagation of Detonation Wave.

Rempei Goto and *Nishio Hirai.*

In the flame front of the stationary detonation wave in the gaseous explosive mixtures, the resultant molecules have an excess energy which is the sum of the activation energy ε and heat of reaction Q. It is assumed that ε can be consumed for the activation of the adjacent zone and Q will be conserved as kinetic energy of the resultant molecules which will be distributed equally for all the degrees of freedom. Taking total mass of the resultant M, and the mean velocity of those molecules V,

$$\frac{1}{2}MV^2=JQ\frac{f_t}{F}$$

where J is the mechanical equivalent of heat, F is tolal degree of freedom and f_t is that of translation. Thus the propagation velocity V can be calculated as follows:

$$V=\sqrt{2JQf_t/FM}$$

Regarding 15 cases of detonation, calculated velocity showed good agreement with observed values.

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9. On the Dielectric Properties of Starch. (I)

The Bahavior of Water Absorbed by Starch in the Field of Ultra High Frequency.

Naokazu Koizumi and *Sozaburo Ono.*

The nature of water absorbed by starch was examined by measuring its dielectric properties. The samples used are "α" modification (J. R. Katz: Z. phys. Chem. A **150**, 60 (1930)) and "β" one (native) of potato starch with various water contents from 0 to 17% and each of these samples was suspended in liquid paraffin. The measurements were made on the above mentioned suspended systems, after Drude's second method at the frequency of 214 megacycles per second and the dielectric canstant and loss were observed at various temperatures from 10^0 to 55^0C.